

## Engineering Interpretations

### **Chemical Properties**

This table shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

### **Properties**

**DEPTH** to the upper and lower boundaries of each layer is indicated.

**SOIL REACTION** is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory.

**SALINITY** is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at typical sites of nonirrigated soils.

*This subsection includes:*

- **(a) Chemical Properties**

Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Cation	Effective	Soil reaction
		exchange capacity	cation exchange capacity	
	In	meq/100 g	meq/100 g	pH
66014:				
Haymond-----	0-6	8.0-18	5.0-15	6.1-7.8
	6-41	8.0-18	5.0-15	6.1-7.8
	41-80	4.0-10	3.0-7.0	6.1-7.8
70028:				
Moko-----	0-3	15-40	15-45	6.6-7.8
	3-8	15-40	15-40	6.6-7.8
	8-60	---	---	---
Rock outcrop.				
73013:				
Lowassie-----	0-10	5.0-12	4.0-10	5.1-7.3
	10-18	5.0-15	5.0-15	4.5-6.0
	18-36	12-35	5.0-25	3.5-5.5
	36-80	8.0-31	6.0-32	3.5-5.5
73032:				
Gatewood-----	0-2	10-30	9.0-29	5.1-7.3
	2-10	10-18	8.0-16	5.1-7.3
	10-28	30-44	27-41	5.1-7.8
	28-60	---	---	---
73039:				
Glensted-----	0-9	11-17	8.0-13	5.1-7.3
	9-14	21-27	17-22	5.1-6.5
	14-33	21-27	17-22	5.6-7.3
	33-60	14-18	10-14	5.6-7.3
73053:				
Lily-----	0-3	3.0-12	2.0-10	3.5-5.5
	3-8	3.0-12	2.0-10	3.5-5.5
	8-15	9.0-15	5.0-12	3.5-5.5
	15-21	9.0-15	5.0-12	3.5-5.5
	21-23	9.0-15	5.0-12	3.5-5.5
	23-60	---	---	---
Bender-----	0-4	3.0-10	2.0-8.0	3.5-6.5
	4-12	3.0-10	2.0-8.0	3.5-6.0
	12-23	5.0-14	3.0-12	3.5-6.0
	23-60	---	---	---
73066:				
Bender-----	0-4	3.0-10	2.0-8.0	3.5-6.5
	4-12	3.0-10	2.0-8.0	3.5-6.0
	12-23	5.0-14	3.0-12	3.5-6.0
	23-60	---	---	---
73067:				
Bender-----	0-4	3.0-10	2.0-8.0	3.5-6.5
	4-12	3.0-10	2.0-8.0	3.5-6.0
	12-23	5.0-14	3.0-12	3.5-6.0
	23-60	---	---	---
Rock outcrop.				

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation	Effective	Soil reaction
		exchange capacity	cation exchange capacity	
	In	meq/100 g	meq/100 g	pH
73080:				
Alred-----	0-4	5.0-18	4.0-16	5.1-6.5
	4-17	5.0-12	3.0-10	5.1-6.5
	17-27	8.0-13	6.0-11	4.5-6.5
	27-60	12-25	10-23	4.5-6.5
Bardley-----	0-4	5.0-18	4.0-16	5.1-6.5
	4-8	5.0-10	2.0-7.0	4.5-6.5
	8-27	30-50	21-40	4.5-7.3
	27-60	---	---	---
Rock outcrop.				
73087:				
Celt-----	0-4	7.0-18	4.0-12	4.5-7.3
	4-22	20-35	15-35	3.5-5.0
	22-39	7.0-20	5.0-18	3.5-5.0
	39-80	20-35	15-30	3.5-5.0
73089:				
Rueter-----	0-3	2.0-11	1.0-8.0	3.5-6.0
	3-14	4.0-10	1.0-6.0	3.5-6.0
	14-45	2.0-12	1.0-10	3.5-6.0
	45-80	10-32	7.0-29	4.5-6.0
73094:				
Gatewood-----	0-2	10-30	9.0-29	5.1-7.3
	2-10	10-18	8.0-16	5.1-7.3
	10-28	30-44	27-41	5.1-7.8
	28-60	---	---	---
73098:				
Plato-----	0-8	6.0-16	4.0-13	5.1-7.3
	8-20	14-30	8.0-24	3.5-5.5
	20-48	10-16	7.0-13	3.5-5.5
	48-60	18-36	14-32	4.5-6.0
73135, 73136:				
Union-----	0-9	6.0-16	4.0-14	5.6-6.5
	9-30	14-24	10-20	4.5-5.5
	30-53	8.0-18	5.0-15	3.5-5.0
	53-80	20-40	15-35	4.5-6.0
73159:				
Yelton-----	0-3	3.0-12	2.0-9.0	5.6-6.5
	3-8	3.0-12	2.0-9.0	3.5-6.5
	8-19	8.0-20	5.0-16	3.5-5.5
	19-38	5.0-15	3.0-10	3.5-5.5
	38-65	8.0-20	5.0-25	3.5-5.5
73160:				
Hobson-----	0-8	5.0-15	2.0-12	4.5-7.3
	8-12	5.0-15	2.0-12	4.5-5.5
	12-27	8.0-18	5.0-16	4.5-5.5
	27-45	5.0-15	2.0-12	4.5-5.5
	45-65	20-35	15-30	4.5-5.5
73161, 73162:				
Alred-----	0-7	5.5-12	2.0-9.0	4.5-7.3
	7-15	4.0-12	2.0-9.0	4.5-6.5
	15-21	7.5-13	3.0-10	4.5-6.0
	21-80	14-27	13-26	3.5-5.0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation	Effective	Soil reaction
		exchange capacity	cation exchange capacity	
	In	meq/100 g	meq/100 g	pH
73161, 73162:				
Rueter-----	0-3	2.0-11	1.0-8.0	3.5-6.0
	3-14	4.0-10	1.0-6.0	3.5-6.0
	14-45	2.0-12	1.0-10	3.5-6.0
	45-80	10-32	7.0-29	4.5-6.0
73163:				
Bardley-----	0-4	20-30	15-25	4.5-6.5
	4-8	5.0-10	2.0-7.0	4.5-6.5
	8-27	30-50	21-40	4.5-7.3
	27-60	---	---	---
Alred-----	0-7	5.5-12	2.0-9.0	4.5-7.3
	7-15	4.0-12	2.0-9.0	4.5-6.5
	15-21	7.5-13	3.0-10	4.5-6.0
	21-80	14-27	13-26	3.5-5.0
Gasconade-----	0-2	25-45	25-50	6.6-7.3
	2-8	25-45	25-50	6.6-7.3
	8-14	25-45	25-50	6.6-7.8
	14-60	---	---	---
73164:				
Bender-----	0-4	3.0-10	2.0-8.0	3.5-6.5
	4-12	3.0-10	2.0-8.0	3.5-6.0
	12-23	5.0-14	3.0-12	3.5-6.0
	23-60	---	---	---
Rock outcrop.				
73165:				
Knobby-----	0-3	10-20	6.0-15	6.6-8.4
	3-7	10-20	6.0-15	6.6-8.4
	7-60	---	---	---
Rock outcrop.				
Bardley-----	0-4	20-30	15-25	4.5-6.5
	4-8	5.0-10	2.0-7.0	4.5-6.5
	8-27	30-50	21-40	4.5-7.3
	27-60	---	---	---
73166:				
Viburnum-----	0-4	5.0-15	3.0-10	4.5-7.3
	4-7	5.0-15	3.0-10	4.5-5.5
	7-13	15-25	10-20	4.5-5.5
	13-20	20-30	15-25	4.5-5.5
	20-80	25-35	20-30	3.5-5.0
Tonti-----	0-3	5.0-15	3.0-12	3.5-6.5
	3-9	5.0-15	3.0-12	3.5-5.5
	9-23	10-25	10-25	3.5-5.5
	23-44	5.0-15	5.0-15	3.5-5.5
	44-61	10-30	5.0-25	3.5-5.5
73168:				
Swiss-----	0-3	15-22	3.0-9.0	4.5-6.5
	3-9	5.0-12	2.0-7.0	4.5-6.5
	9-40	20-26	13-20	3.5-7.3
	40-80	6.0-12	4.0-11	5.1-6.5

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation	Effective	Soil reaction
		exchange capacity	cation exchange capacity	
	In	meq/100 g	meq/100 g	pH
73169, 73170:				
Beemont-----	0-3	5.0-15	3.0-12	4.5-6.5
	3-11	5.0-15	3.0-12	3.5-6.0
	11-59	25-45	20-40	3.5-6.5
	59-80	---	---	---
Gatewood-----	0-2	10-30	9.0-29	5.1-7.3
	2-10	10-18	8.0-16	5.1-7.3
	10-28	30-44	27-41	5.1-7.8
	28-60	---	---	---
73171:				
Plato, eroded-----	0-7	15-30	7.0-20	5.1-7.3
	7-23	20-40	15-35	3.5-5.5
	23-40	10-20	7.0-15	3.5-5.5
	40-80	15-25	10-20	4.5-6.0
73172:				
Rosati-----	0-9	6.0-16	4.0-14	4.5-7.3
	9-29	16-30	13-27	4.5-6.5
	29-41	10-18	7.0-15	4.5-5.5
	41-80	12-18	10-16	4.5-6.0
73173, 73174:				
Lily-----	0-3	3.0-12	2.0-10	3.5-5.5
	3-8	3.0-12	2.0-10	3.5-5.5
	8-15	9.0-15	5.0-12	3.5-5.5
	15-21	9.0-15	5.0-12	3.5-5.5
	21-23	9.0-15	5.0-12	3.5-5.5
	23-60	---	---	---
Yelton-----	0-3	3.0-12	2.0-9.0	5.6-6.5
	3-8	3.0-12	2.0-9.0	3.5-6.5
	8-19	8.0-20	5.0-16	3.5-5.5
	19-38	5.0-15	3.0-10	3.5-5.5
	38-65	8.0-20	5.0-25	3.5-5.5
73175:				
Poynor-----	0-5	3.0-12	3.0-10	3.5-6.5
	5-11	4.0-12	3.0-10	3.5-6.0
	11-17	7.0-15	5.0-15	3.5-6.0
	17-60	20-35	15-30	3.5-5.5
Bendavis-----	0-5	3.0-10	2.0-8.0	4.5-6.0
	5-9	3.0-10	2.0-8.0	4.5-6.0
	9-25	8.0-16	3.0-12	4.5-6.0
	25-60	---	---	---
73176:				
Bendavis-----	0-5	3.0-10	2.0-8.0	4.5-6.0
	5-9	3.0-10	2.0-8.0	4.5-6.0
	9-25	8.0-16	3.0-12	4.5-6.0
	25-60	---	---	---
Poynor-----	0-5	3.0-12	3.0-10	3.5-6.5
	5-11	4.0-12	3.0-10	3.5-6.0
	11-17	7.0-15	5.0-15	3.5-6.0
	17-60	20-35	15-30	3.5-5.5
73178:				
Bendavis-----	0-5	3.0-10	2.0-8.0	4.5-6.0
	5-9	3.0-10	2.0-8.0	4.5-6.0
	9-25	8.0-16	3.0-12	4.5-6.0
	25-60	---	---	---

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation	Effective	Soil reaction
		exchange capacity	cation exchange capacity	
	In	meq/100 g	meq/100 g	pH
73179:				
Viraton-----	0-3	5.0-15	3.0-10	4.5-7.3
	3-7	5.0-15	3.0-10	4.5-5.5
	7-23	10-20	8.0-18	3.5-5.5
	23-48	5.0-15	3.0-12	3.5-5.5
	48-60	10-20	8.0-18	3.5-5.5
Wilderness-----	0-4	5.0-15	3.0-10	3.5-6.5
	4-11	5.0-15	3.0-10	3.5-5.5
	11-22	10-20	7.0-15	3.5-5.5
	22-42	5.0-15	3.0-10	3.5-5.5
	42-60	10-25	7.0-20	3.5-5.5
73180:				
Gatewood-----	0-2	10-30	9.0-29	5.1-7.3
	2-10	10-18	8.0-16	5.1-7.3
	10-28	30-44	27-41	5.1-7.8
	28-60	---	---	---
Gasconade-----	0-2	25-45	25-50	6.6-7.3
	2-8	25-45	25-50	6.6-7.3
	8-14	25-45	25-50	6.6-7.8
	14-60	---	---	---
73181:				
Useful-----	0-7	10-17	7.0-14	5.1-6.5
	7-31	18-23	15-20	4.5-6.0
	31-45	18-30	15-27	5.6-7.8
	45-53	18-30	15-27	5.6-7.8
	53-60	---	---	---
Gatewood-----	0-2	10-30	9.0-29	5.1-7.3
	2-10	10-18	8.0-16	5.1-7.3
	10-28	30-44	27-41	5.1-7.8
	28-60	---	---	---
73182:				
Lebanon-----	0-3	5.0-15	3.0-12	5.6-7.3
	3-5	5.0-15	3.0-12	4.5-6.5
	5-25	15-30	12-25	4.5-5.5
	25-49	10-20	8.0-16	4.5-5.5
	49-80	15-30	12-25	4.5-5.5
73183:				
Scholten-----	0-7	5.0-15	3.0-12	4.5-6.0
	7-21	5.0-15	3.0-12	3.5-5.5
	21-33	5.0-15	3.0-12	3.5-5.5
	33-63	5.0-15	3.0-12	3.5-5.5
Tonti-----	0-3	5.0-15	3.0-12	3.5-6.5
	3-9	5.0-15	3.0-12	3.5-5.5
	9-23	10-25	10-25	3.5-5.5
	23-44	5.0-15	5.0-15	3.5-5.5
	44-61	10-30	5.0-25	3.5-5.5
73184:				
Knobby-----	0-3	10-20	6.0-15	6.6-8.4
	3-7	10-20	6.0-15	6.6-8.4
	7-60	---	---	---
Rock outcrop.				

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation	Effective	Soil reaction
		exchange capacity	cation exchange capacity	
	In	meq/100 g	meq/100 g	pH
73186:				
Bardley-----	0-4	20-30	15-25	4.5-6.5
	4-8	5.0-10	2.0-7.0	4.5-6.5
	8-27	30-50	21-40	4.5-7.3
	27-60	---	---	---
Alred-----	0-7	5.5-12	2.0-9.0	4.5-6.5
	7-15	4.0-12	2.0-9.0	4.5-6.5
	15-21	7.5-13	3.0-10	4.5-6.0
	21-80	14-27	13-26	3.5-5.0
Gasconade-----	0-2	25-45	25-50	6.6-7.3
	2-8	25-45	25-50	6.6-7.3
	8-14	25-45	25-50	6.6-7.8
	14-60	---	---	---
73187:				
Bender-----	0-4	3.0-10	2.0-8.0	3.5-6.5
	4-12	3.0-10	2.0-8.0	3.5-6.0
	12-23	5.0-14	3.0-12	3.5-6.0
	23-60	---	---	---
Rock outcrop.				
73188:				
Bendavis-----	0-5	3.0-10	2.0-8.0	4.5-6.0
	5-9	3.0-10	2.0-8.0	4.5-6.0
	9-25	8.0-16	3.0-12	4.5-6.0
	25-60	---	---	---
Poynor-----	0-5	3.0-12	3.0-10	3.5-6.5
	5-11	4.0-12	3.0-10	3.5-6.0
	11-17	7.0-15	5.0-15	3.5-6.0
	17-60	20-35	15-30	3.5-5.5
73189:				
Useful-----	0-7	10-17	7.0-14	5.1-6.5
	7-31	18-23	15-20	4.5-6.0
	31-45	18-30	15-27	5.6-7.8
	45-53	18-30	15-27	5.6-7.8
	53-60	---	---	---
Gatewood-----	0-2	10-30	9.0-29	5.1-7.3
	2-10	10-18	8.0-16	5.1-7.3
	10-28	30-44	27-41	5.1-7.8
	28-60	---	---	---
74634:				
Hartville-----	0-7	10-16	9.0-15	4.5-7.3
	7-12	9.0-20	7.0-18	4.5-6.5
	12-48	18-25	14-21	4.5-6.5
	48-80	16-25	15-24	6.1-7.3
74652:				
Lecoma-----	0-9	5.0-15	4.0-14	5.6-7.3
	9-31	7.0-15	5.0-13	5.1-7.3
	31-60	10-15	7.0-12	4.5-6.0
74653:				
Raccoon-----	0-6	14-20	16-22	4.5-7.3
	6-26	11-16	9.0-14	4.5-7.3
	26-60	16-23	5.0-15	4.5-5.5

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation	Effective	Soil reaction
		exchange capacity	cation exchange capacity	
	In	meq/100 g	meq/100 g	pH
74653:				
Freeburg-----	0-9	14-20	8.0-15	4.5-7.3
	9-13	11-20	7.0-17	4.5-6.0
	13-52	13-20	11-18	4.5-6.0
	52-80	14-20	11-18	4.5-7.3
74656:				
Deible-----	0-10	7.0-20	5.0-18	4.5-7.8
	10-15	7.0-20	5.0-17	4.5-7.8
	15-37	20-35	14-30	4.5-7.8
	37-80	10-20	9.0-16	5.1-7.8
75375:				
Horsecreek-----	0-9	8.0-16	8.0-16	5.6-7.3
	9-19	8.0-16	8.0-16	5.6-7.3
	19-60	8.0-16	8.0-16	5.6-7.3
75376:				
Cedargap-----	0-9	7.0-17	7.0-17	5.6-7.3
	9-49	10-18	10-18	5.6-7.3
	49-60	18-40	18-40	5.6-7.3
75388:				
Kaintuck-----	0-6	4.0-10	2.0-10	5.6-7.3
	6-80	5.0-8.0	2.0-8.0	5.6-7.3
Relfe-----	0-6	6.0-12	4.0-10	5.6-7.3
	6-60	4.0-10	2.0-6.0	5.1-6.5
75391:				
Possumtrot-----	0-9	4.0-16	4.0-10	4.5-7.3
	9-40	4.0-16	2.0-10	4.5-6.5
	40-80	1.0-6.0	1.0-5.0	4.5-6.5
75398:				
Kaintuck-----	0-6	4.0-10	2.0-10	5.6-7.3
	6-80	5.0-8.0	2.0-8.0	5.6-7.3
75412:				
Razort-----	0-7	6.0-25	6.0-27	6.1-7.3
	7-34	5.0-20	5.0-20	5.6-7.3
	34-80	5.0-20	5.0-20	5.6-7.3
75413:				
Relfe-----	0-6	6.0-12	4.0-10	5.6-7.3
	6-60	4.0-10	2.0-6.0	5.1-6.5
75414:				
Wideman-----	0-8	1.0-10	1.0-8.0	4.5-7.3
	8-55	1.0-15	1.0-12	5.1-7.3
	55-80	1.0-10	1.0-8.0	5.1-7.3
99000.				
Pits, quarries				
99001.				
Water				
99003.				
Miscellaneous water				